

Message

From: Deltoral, Miguel [deltoral.miguel@epa.gov]
Sent: 4/15/2016 7:42:21 PM
To: Maraldo, Dean [Maraldo.Dean@epa.gov]; Mendez, Thomas [mendez.thomas@epa.gov]
Subject: Fwd: On The Record / Last Night's City Council Meeting /Handouts for Today's Community Meeting in Flint / Response to the Government Agencies

Miguel A. Del Toral
 Regulations Manager, GWDWB
 U.S. EPA Region 5 (WG-15J)
 77 West Jackson Blvd
 Chicago, IL 60604
 W: (312) 886-5253

Begin forwarded message:

From: "Kaplan, Robert" <kaplan.robert@epa.gov>
Date: April 14, 2016 at 9:32:13 AM CDT
To: "Burke, Thomas" <Burke.Thomas@epa.gov>, "Lytle, Darren" <Lytle.Darren@epa.gov>, "Schock, Michael" <Schock.Michael@epa.gov>, "Deltoral, Miguel" <deltoral.miguel@epa.gov>
Subject: Fwd: On The Record / Last Night's City Council Meeting /Handouts for Today's Community Meeting in Flint / Response to the Government Agencies

Good responses from Dr Edwards. Pls see below.

Acting Regional Administrator
 EPA Region 5 - Chicago
 Office: (312) 886-1499
 Cell: (312) 515-9827

Begin forwarded message:

From: "Johnson, Mark" <johnson.mark@epa.gov>
Date: April 14, 2016 at 10:24:04 AM EDT
To: "Durno, Mark" <durno.mark@epa.gov>, "Kelly, Brian" <kelly.brian@epa.gov>, "Bassler, Rachel" <Bassler.Rachel@epa.gov>, "Blake, Robert G. (CDC/ONDIEH/NCEH)" <emn9@cdc.gov>, "Knutson, Donna (CDC/OCOO/OFR)" <dbk2@cdc.gov>, "Breyse, Patrick N. (CDC/ONDIEH/NCEH)" <pjb7@cdc.gov>, "Kaplan, Robert" <kaplan.robert@epa.gov>, "Hyde, Tinka" <hyde.tinka@epa.gov>, "Henry, Timothy" <henry.timothy@epa.gov>, "Lippert, Jeffrey" <lippert.jeffrey@epa.gov>
Subject: Fw: On The Record / Last Night's City Council Meeting /Handouts for Today's Community Meeting in Flint / Response to the Government Agencies

Here is the response from Marc Edwards to Water Defense.

Mark D. Johnson, PhD, DABT

Regional Director/Toxicologist

Agency for Toxic Substances and Disease Registry

77 W. Jackson Blvd

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email: mdjohnson@cdc.gov

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From: Wells, Eden (DHHS) <WellsE3@michigan.gov>

Sent: Thursday, April 14, 2016 8:10 AM

To: Johnson, Mark; feighnerb@michigan.gov; Brown, Melanie (DEQ); Minicuci, Angela (DHHS); Eisner, Jennifer (DHHS); Lasher, Geralyn (DHHS); Becker, Timothy (DHHS); Lyon, Nick (DHHS); Moran, Susan (DHHS); Dykema, Linda D. (DHHS); Groetsch, Kory J. (DHHS); Durno, Mark; Gray, Jennifer (DHHS)

Subject: Fwd: On The Record / Last Night's City Council Meeting / Handouts for Today's Community Meeting in Flint / Response to the Government Agencies

Eden V. Wells, MD, MPH, FACPM

Chief Medical Executive

Michigan Department of Health and Human Services

Tel: 517-335-8011

Sent from my iPhone, please excuse typos

Begin forwarded message:

From: Mona Hanna-Attisha <MHanna1@hurleymc.com>

Date: April 14, 2016 at 8:21:34 AM EDT

To: Eden Wells <wellse3@michigan.gov>

Subject: FW: On The Record / Last Night's City Council Meeting / Handouts for Today's Community Meeting in Flint / Response to the Government Agencies

FYI

Mona Hanna-Attisha MD MPH FAAP
 Director, Pediatric Public Health Initiative
 Hurley Children's Hospital at Hurley Medical Center
 Michigan State University College of Human Medicine
 Department of Pediatrics and Human Development
Mhanna1@hurleymc.com

From: Marc Edwards [edwardsm@vt.edu]

Sent: Thursday, April 14, 2016 12:19 AM

To: 'Scott Smith'; Mona Hanna-Attisha

Cc: 'Melissa Mays'; 'Rick Carter'; 'Art Reyes'; 'Amy Lange'; 'Andrew Keller'; Citizen Name / Ex. 6; 'Caresse Jackman'; 'Ilse Hayes'; 'Kane Farabaugh'; 'Natalie Zarowny'; 'Stephanie Parkinson'; 'Jim Lynch';

Citizen Name / Ex. 6 'Judith Zelikoff'; 'Douglas J. Fort'

Citizen Name / Ex. 6

Subject: RE: On The Record / Last Night's City Council Meeting / Handouts for Today's Community Meeting in Flint / Response to the Government Agencies

Hi Scott. My questions and comments are below.

>>An important point to consider is that in all of the homes tested so far we have found harmful chemicals. The disturbing health symptoms exhibited by the residents living in these homes, suggests a correlation that for these residents, it is not safe to shower or bathe in their hot water.

Response: Harmful chemicals are in all U.S. drinking water. Both in the water coming into homes and in water heaters. One reason that they are there, is that they form as a by-product of chlorination, which is considered one of the most important public health interventions of the century. Literally, millions of people would die each year if we did not chlorinate water from fecal derived pathogens. Thousands would die from bacteria such as legionella. Thus, we accept the risk from these chemicals, even though we minimize it.

Again, in my opinion, the appropriate question is not whether harmful chemicals are there. Of course they are. The question is "Are these chemicals present at levels higher than elsewhere in the U.S.?"

How do you draw a "correlation" between these chemicals which are present in virtually all treated U.S. surface waters, very often at much higher levels than in Flint, and the disturbing health symptoms which no one is discounting? I do not see any basis for drawing a correlation, suggested or otherwise.

Are you and the rest of Water Defense, willing to accept liability, for any health harm that arises if people not currently affected by rashes and other ailments, stop bathing? Who decided that the risk from these chemicals, is more important than the health benefits from bathing? Obviously if Flint residents are getting rashes and health ailments from bathing, or think they are, they should stop engaging in that activity. But this is currently not a majority of Flint consumers.

Please note that we accept the risk of these chemicals in potable water, because the dangers of not chlorinating, dramatically exceed

the dangers of the known harmful exposure. It is not possible to make risk-free drinking water.

Furthermore, this past weekend, at WD's expense, I retained a certified, 3rd party to perform air quality testing in bathrooms when hot water is running from shower heads. There are sufficient data/evidence that harmful metals or chemicals can be released into the air from hot water and we decided that we needed this real world data; hence initiating air testing. If these metals (lead included) and chemicals are inhaled by the residents, other adverse health conditions could develop. My tests this past weekend included 3 homes (for air and more water testing) and a dorm at the University of Michigan, Flint campus (for water testing). I expect the lab reports for the last round of water tests by this Friday. The results for the air sampling tests should be available by Monday. Once I review these results with the Water Defense toxicologists, I will reach out to you to set up a conference call for the WD toxicologists, you, and me to review the WD findings and capture your thoughts.

Response: Excellent. I assume you are running appropriate controls, to test the same air without the showering in each home? And that the testing will be conducted in at least triplicate (controls and without controls) so that you can determine whether the shower significantly increased the levels in the air in each home with scientific confidence? Can you show me ANY data that suggest metal levels in air are increased as a result of showering? Finally, shouldn't you do the same tests, in Detroit or other cities with chlorination, to see if the levels in Flint are higher than other cities?

Note that the WD toxicologists are Dr. Judith Zelikoff (<http://www.med.nyu.edu/biosketch/zelikj01>) and Dr. Douglas Fort (http://www.fortlabs.com/Resume_Fort.htm). Both have impeccable reputations and Dr. Fort's latest CV is attached to this e-mail. The attached statements contain the relevant toxicology input from Dr. Zelikoff and Dr. Fort after they reviewed my testing data.

It is true that currently there are no standards for water quality used in homes for bathing or showering. In no way should the lack of standards be an excuse for inaction to resolve the water-quality problems confronted by Flint residents. When disasters reveal gaps in regulatory rules, standards, etc., it is prudent to assess the situation with real world testing and data and admit what we all don't know; which is precisely why we are testing water heaters and showers in Flint to get the data and get answers to what we don't know and fill the regulatory gaps along with nonexistent standards for bathing and showering. As an example, Dr. Zelikoff has addressed some of these gaps with the attached paper she wrote in 1993; and those gaps exist to this day when it comes to inhalation and dermal exposure of contaminated water for all chemicals via showering, which is why I shared her paper.

Response: I respectfully disagree. We have known about these gaps for two decades. The showering exposure to DBPs is well understood. It is known to be significant. Nonetheless, EPA has decided to regulate these chemicals in the distribution system. While I appreciate that you are trying to advance the science and fill this gap,

would it not be important to make it clear to Flint residents, that these are risks that people outside of Flint are routinely exposed to? Wouldn't that be more fair? The impression you are creating is that this is something special in Flint alone, and it is playing on legitimate fears that residents have after 18 months of betrayal, when they were exposed to risks higher than other U.S. cities. I am concerned that without putting this into context, you are making residents believe that something unusual is going on here, rather than what is already well known and accepted.

As Dr. Zelikoff points out in her paper from 1993 further research needs to be done on inhalation – we are now doing that research with the air testing we initiated in Flint in real world conditions and not just on theories. There are no bathing or showering standards and we believe comparisons to drinking water standards and/or testing data (including Disinfection by-products, Chloroform etc.) from water treatment plants/distribution systems and then basing conclusions downstream in bathroom showers on theories is simply not enough to declare all the water in Flint as safe for showering or bathing, especially given all the cases of health effects being reported in Flint.

Response: Again, please put this into context with what is being experienced elsewhere. DBP exposure in showers is much worse in many other cities. The DBP regulations, while not measured in showers, are likely to be roughly correlated to the risk in showers. Also, again, all of this is known, based on field data...not theories.

Given that particulate lead and other chemicals appear to be an ongoing problem in the water in Flint and testing data is varying widely in ongoing testing, this appears to be a concern and we believe we need real world air and complete water testing data before definitive conclusions are drawn and made to the public. We want nothing more than for the air testing we just did to come back with non-detects across the board.

Response: Household air already has some lead in it. So you need to do appropriate controls. We have done testing trying to disprove the conventional wisdom that significant lead will be mobilized from water, under some pretty extraordinary conditions. Instead, we proved just the opposite. If you prove otherwise, that is fine, but in the meantime, is it appropriate to raise concerns that the conventional wisdom is wrong? Also, everyone is concerned about the stubbornly high levels of lead persisting in the Flint water. We just did a press conference on that yesterday.

I also shared the paper written by Dr. Andrew Whelton of Purdue that focuses on real world disaster data collected and what was learned from compromised plumbing systems in other recent contamination events. You did not address the issues and findings from Dr. Whelton's research paper in real world disasters. I am interested in hearing your opinion of the findings in this paper (attached to this e-mail), specifically on the recent recommendations from the agencies as to Flint on opening all the pipes / faucets in homes at the same time and the potential for this to increase volatile chemical exposure via inhalation.

Response: Steve, I worked with Andy when he was a student at Virginia Tech. I reviewed his paper on flushing of organic chemicals in water heaters and am intimately familiar with that work, and I recommended it for publication. It is a fine paper examining the flushing of a chemical from plumbing due to a man-made chemical spill in West Virginia. I do not understand its relevance to the organic chemicals you are finding in Flint, which are expected to be present in homes all over the U.S.. Also, on the basis of theory and our own lab studies, levels of lead from aerosolized tap water are trivial, compared to those that can be taken up by drinking.

Please consider this simple model. If a consumer drinks a liter of water with 10 ppb lead, that is 10 ug of lead exposure. To get the same exposure in the shower, a consumer would have to inhale a liter of water, AND the drops would have to deposit into the lungs. Only tiny amounts of water droplets are formed during showering, (please note, most steam you see is evaporated water that condenses in air and that is essentially distilled water that has no lead). You would literally drown from inhaling a liter of tap water. Consequently, consumer exposure from lead in shower droplets is thousands of times lower than exposure to lead that would be consumed in drinking water. Can you please point out the flaw in my logic above? Why is this speculation about lead in aerosolized shower air being raised at this time? It is unnecessarily alarming residents?

Best Regards,

Scott Smith
Chief Technology Officer & Investigator
Water Defense
Twitter @WaterWarriorOne
(508) 345-6520

From: Mark Edwards <edwardsm@vt.edu>

Date: Wednesday, April 13, 2016 at 2:29 AM

To: Scott Smith <ssmith@waterdefense.org>, "Dr. Mona Hanna-Attisha" <MHanna1@hurleymc.com>

Cc: Melissa Mays <wateryoufightingfor@gmail.com>, Rick Carter <rick@michfa.org>, Art Reyes <AREyes@populardemocracy.org>, Amy Lange <amy.lange@foxtv.com>, Andrew Keller <andrew.keller@wnem.com> Citizen Name / Ex. 6

Personal Email / Ex. 6 <@gmail.com>, Caresse Jackman <caresse.jackman@abc12.com>, Ilse Hayes <ihayes@sbgstv.com>, Kane Farabaugh <kfarabau@voanews.com>, Natalie Zarowny <natalie.zarowny@abc12.com>, Stephanie Parkinson <sparkinson@sbgstv.com>, Jim Lynch <JLynch@detroitnews.com>, Citizen Name / Ex. 6

Citizen Name / Ex. 6 <@gmail.com>

Subject: RE: On The Record / Last Night's City Council Meeting / Handouts for Today's Community Meeting in Flint / Response to the Government Agencies

Hi Scott,

Thanks for the kind words. Yes I have considered the dermal sorption and inhalation pathways carefully.

I had three comments on the work you sent.

First, other than lead and copper, there is no required monitoring for contaminants in homes or in water heaters in the U.S.. The appropriate monitoring point for these contaminants is in the distribution system. While it is true that DBPs are often higher in water heaters, and exposure in showers is a concern, the question to me is not whether DBPs exist in Flint, but "Are they higher in Flint than in other comparable U.S. cities?" Have you done studies comparing levels of DBPs in Flint to those in other cities? On the basis of organic matter content and chlorine, is there any hypothesis why the levels would be worse in Flint than other cities? The general expectation is that water heater DBPs would be relatively low in Flint.

Second, on the PbO₂ reference you sent, the concern addressed is human exposure by lead dry dust, which is a very significant risk. If you run calculations on lead aerosol formation from water, based on measured lead in Flint water, the transport of lead via small droplets is trivial. I have done those calculations. Lead in dust and dirt is very different from lead in water, due to the very high mass of lead that is airborne. The reference you cited should not be used to support raising of health concerns about very, very, very low level exposure of consumers to lead in water via droplets.

No one is discounting the incidence of rashes or other health concerns of residents. We presented our data today that shows lead in water is still high, and that because of concerns about this, residents should continue to use bottled water and/or filters.

In terms of safety of showering and bathing, the appropriate standard to me, is not that these activities are risk free, but "Are the risks higher than other cities?"

Also, there are serious health risks from not bathing. Are you encouraging Flint residents, and by extension the residents of other cities with similar problems, not to bath over concerns of DBPs in water heaters? On what basis are you determining that the very serious risks from not bathing, are outweighed by the risks you have cited?

I could not find the cited statements and credentials of the Water Defense toxicologists on these issues in the documents you sent. Can you send those to me, and also their phone numbers? I will try to contact them early next week after reading their written statements and backgrounds.

I will have my team send you raw results of our lead analysis that we presented today.

Best Regards,
Marc

From: Scott Smith [mailto:ssmith@waterdefense.org]
Sent: Tuesday, April 12, 2016 9:41 AM
To: Dr. Mona Hanna-Attisha <MHanna1@hurleymc.com>; Mark Edwards <edwardsm@vt.edu>
Cc: Melissa Mays <wateryoufightingfor@gmail.com>; Rick Carter <rick@michfa.org>; Art Reyes <AREyes@populardemocracy.org>; Amy Lange <amy.lange@foxtv.com>; Andrew Keller <andrew.keller@wnem.com>; **Citizen Name / Ex. 6** [redacted]
Personal Email / Ex. 6 [redacted]@gmail.com>; Caresse Jackman <caresse.jackman@abc12.com>; Ilse Hayes <ihayes@sbgvtv.com>; Kane Farabaugh <kfarabau@voanews.com>; Natalie Zarowny <natalie.zarowny@abc12.com>; Stephanie Parkinson <sparkinson@sbgvtv.com>; Jim Lynch <JLynch@detroitnews.com>; **Citizen Name / Ex. 6** [redacted]
Personal Email / Ex. 6 [redacted]@gmail.com>
Subject: On The Record / Last Night's City Council Meeting / Handouts for Today's Community Meeting in Flint / Response to the Government Agencies
Importance: High

Dr. Hanna-Attisha and Dr. Edwards,

I have been attempting to reach both of you to discuss the comprehensive Water Defense testing. I truly admire and respect your efforts, research, and work to protect the community of Flint. Water Defense believes it is important for all data and research to be transparent, considered, and reviewed in its entirety to best preserve and protect the health and well-being of all residents of Flint.

Last night, I spoke at the City Council meeting and entered my 04-09-16 statement (first attachment) into the record along with hand delivering all of the attached prior statements and scientific papers.

Note that Water Defense has done instant grab sample testing to determine the state of the water as it enters the homes, to the water heaters, to all human exposure points in sinks/bathtubs/showers. I have yet to see any of the comprehensive detailed lab reports done by the EPA and/or Virginia Tech and/or MI DEQ. I have provided the detailed Water Defense reports to the EPA and MI DEQ and would appreciate the same in return in the spirit of transparency for the best interest of the health and well-being of the residents of Flint.

I will be providing both of you with additional information from the Water Defense toxicologists and other experts that review my 3rd party testing data. The immediate concerns raised by Water Defense toxicologists are detailed in the attached information.

I am very concerned about the water heaters in schools, nursing homes, and in all residents' homes along with preponderance of health symptoms exhibited within the community from what appears to be bathing/showering. I am not aware of any other water heater testing

and/or hot shower/bathtub testing for the full spectrum of chemicals (including Volatile's that can penetrate the skin via dermal absorption and/or inhaled directly into the lungs) other than Water Defense. If you are aware of any other testing of water heaters and/or hot shower/bathtub water that was used to determine the bathtub/shower water safe for the community of Flint, please let me know as soon as possible as I am working to support the community of Flint directly on the ground here in Flint.

Please note the attached papers from Dr. Judith Zelikoff about the inhalation risks of Particulate Lead and the data collected by Dr. Andrew Whelton from recent contamination events and associated findings in plumbing systems. It may be that the flushing recommendations issued last Friday by the MI DEQ and the EPA could increase the risk of released volatile chemicals and/or aerosolized particulates that pose risks of inhalation.

Have either one of you considered the inhalation and dermal absorption human exposure pathways when making your recommendations? I am concerned about the EPA and MI DEQ comparing water treatment plant water testing data to drinking water standards only to make their determinations – as it seems that complete testing for the full spectrum of chemicals in actual bathrooms/showers and water heaters in homes along with considering all human exposure pathways of inhalation, dermal, and ingestion before affirmative declarations are made that the water is safe to shower and bathe in for all residents of Flint.

Note that Water Defense began air testing of showers (using certified 3rd parties) in bathrooms over this past weekend along with more water heater testing (with instant grab samples side by side with cumulative exposure testing developed by Water Defense). All of our water testing is done by ALS Environmental Laboratories and I look forward to comparing our detailed testing data alongside Virginia Tech, MI DEQ, and EPA.

Please see my note below from the community meeting I spoke at on Saturday.

Thanks.

Best Regards,

Scott Smith
Chief Technology Officer & Investigator
Water Defense
Twitter @WaterWarriorOne
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From: "Scott Smith" <ssmith@waterdefense.org>
To: "Scott Smith" <ssmith@waterdefense.org>
Sent: Saturday, April 9, 2016 10:47:36 AM
Subject: Handouts for Today's Community Meeting in Flint / Response to the Government Agencies

All,

Please see attached Statement and other handouts for Today's Community Meeting in Flint at St. Michael's Church. I will be addressing the science and facts behind Water Defense's research and testing to date in Flint at today's meeting (11:30 am, 609 E 5th Ave, Flint, MI 48503, St. Michael's Church).

Given the *Detroit News Article* this morning (link here:<http://www.detroitnews.com/story/news/michigan/flint-water-crisis/2016/04/08/group-fears-bathing-risks-flint-water/82823590/>) and the statement released yesterday by the Agencies relative to flushing pipes / particulate lead, the scientific papers attached to this e-mail from Dr. Judith Zelikoff (NYU toxicologist whom reviews my work) and Dr. Andrew Whelton (Purdue and expert in contaminated plumbing systems) point out key scientific research and facts that must be taken into consideration to preserve and protect the health and well being of the Flint residents.

Best Regards,

Scott Smith
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